truly, that physically even less than one-tenth second is sufficient to make the maximum impression on the eye, and conclude that a longer duration is therefore unnecessary. This would be a sound conclusion were the atmosphere always clear, but it is not so. Now it is physically true, as they admit, that the duration necessary for the full effect of a flash depends on the intensity of the light; a weaker flash must have a longer duration than a stronger one, to make the full effect on the retina. But by the time a powerful flash has pierced a few miles of hazy atmosphere, it is no longer powerful, and if it has not a duration suitable to its reduced power, it will not be seen so far. This is a question which cannot be settled on merely theoretical grounds, but must inevitably be a matter of experience. The following are a few figures showing the great power of some modern lighthouse apparatus now in use in the Trinity House and Northern Lighthouse Services, as compared with anything employed during the days of colza oil, fixed lights, and apparatus of many sides.

The Isle of May light has a calculated intensity of no less than 26,000,000 candles to each flash, while the St. Catherine's electric light, calculated on the same basis, has a strength of beam equal to 5,000,000 candles. The power of the La Heve electric light is stated at 23,000,000 candles.

Turning now to the ordinary lights, where paraffin oil is the illuminant, the following may be mentioned as being of very great power. The Bishop Rock, biform, with two eight-wick burners and hyper-radiant apparatus, gives a flash of 175,000 candles. The Eddystone, with two six-wick burners and first order apparatus, gives a flash of 75,000 candles. Sule Skerry, with one six-wick burner and hyper-radiant apparatus, gives a flash of 74,000 candles, and Fair Isle North, one six-wick burner and hyper-radiant apparatus, without upper and lower prisms, gives a flash of 72,000-candle power.

The result of recent improvements in the optical apparatus used in lighthouses, and in the increased power of the lamps, is that the mariner is now getting the benefit of lights of greater intensity and more characteristic appearance, easily and rapidly recognisable.

THE DEPARTMENT OF ENTOMOLOGY IN THE U.S. NATIONAL MUSEUM.

THE staff of the Department of Insects of the U.S. National Museum has been reorganised, as a result of the death of the former Honorary Curator, Prof. C. V. Riley.

The reorganisation has been effected by the appointment of Mr. L. O. Howard, Entomologist of the U.S. Department of Agriculture, to the position of Honorary Curator of the Department of Insects; of Mr. Wm. H. Ashmead to the position of Custodian of Hymenoptera; and Mr. D. W. Coquillett to the position of Custodian of Diptera. All Museum custodians are honorary officers. Mr. M. L. Linell will remain as general assistant to the Honorary Curator.

The Department is at present in excellent working condition. It contains a very great amount of material in all orders, and in many unusual directions surpasses any collection in the United States. Among others, the following are of especial interest:—

(1) The large collection, in all orders, of the late Prof. C. V. Riley.

(2) All of the material gathered during the past eighteen years by correspondents, field agents, and the office staff of the Division of Entomology, U.S. Department of Agriculture.

(3) The greater part of the collection of the late Asa Fitch.

(4) The large collection, in all orders, of the late G W. Belfrage.

(5) The collections in Lepidoptera and Coleoptera made by Dr. John B. Smith down to 1889, together with the types of the Noctuidæ since described by Dr. Smith.

(6) The collection of Lepidoptera of the late O. Meske.

(7) The collection of Lepidoptera of G. Beyer.

(8) The collection of Coleoptera of M. L. Linell.

(9) The bulk of the collection, in all orders, of the late H. K. Morrison.

(10) The collection of Diptera of the late Edward Burgess.

(11) The type collection of Syrphidæ made by Dr. S. W. Williston.

(12) The collection of Ixodidæ of the late Dr. George Marx.

(13) The collection of Myriopoda of the late C. H. Bollman.

(14) Sets of the Neo-tropical collections of Herbert Smith.

(15) The collection of Hymenoptera of Wm. J. Fox.

(16) The collection of Tineina of Wm. Beutenmuller.

(17) The large Japanese collection, in all orders, of Dr. K. Mitsukuri.

(18) The African collections, in all orders, of Dr. W. S. Abbott, Wm. Astor Chanler, J. F. Brady, the last "Eclipse" expedition to West Africa, and of several missionaries.

(19) The large collection from South California of D. W. Coquillett, in Coleoptera, Hymenoptera, Lepidoptera and Orthoptera.

(20) The Townend Glover manuscripts and plates.

In addition to this material, there are minor collections which have been the result of the work of Government expeditions, or are gifts from United States Consuls and many private individuals.

This enormous mass of material is being cared for by the active and honorary force of the Department, and the perpetuity of the collection is assured. The National Museum building is fireproof, and this, together with the fact that it is a National institution, renders the Department of Insects, perhaps, the best place in the United States for the permanent deposit of types by working specialists in entomology, and for the ultimate resting-place of large collections made by individuals.

The policy of the Museum at large, with regard to the use of its collections by students, is a broad and liberal one. Students are welcome in all departments, and every facility is given to systematists of recognised standing.

NOTES.

IT is proposed by the Administrative Council of the Pasteur Institute to make an international appeal for subscriptions to erect a monument to the memory of Pasteur.

AN ordinary meeting of the Royal Society, for the reading of papers though not announced upon the printed list of arranged meetings, will be held on the 28th inst.

SIR ARCHIBALD GEIKIE and Prof. Story Maskelyne have been elected corresponding members of the Munich Academy of Sciences, in the Mathematical and Physical Section; and Dr. H. B. Swete, of Cambridge, has been elected a corresponding member in the Philosophical and Philological Section of the same Academy.

IN accordance with the arrangement mentioned in our last week's issue, Dr. A. G. Butler becomes Senior Assistant-Keeper of the Zoological Department of the British Museum, with special charge of the section of insects, and Mr. Edgar A. Smith and Dr. R. Bowdler Sharpe have been promoted to fill the two other assistant-keeperships. Mr. Vernon Herbert Blackman, of St. John's College, Cambridge, has been appointed, after competitive examination, an assistant in the Department of Botany, in the place rendered vacant by the promotions consequent upon the retirement of Mr. Carruthers.

With reference to the aurora briefly noted in our last number (p. 35), Mr. J. Shaw writes from Tynron, Dumfriesshire, as follows:—"At 11 p.m. November 9, I saw an aurora extending from the north-west to the north-east, where it began to break into long lines, one line lying above the planet Jupiter. It occupied about one-fourth of the distance from horizon to zenith at its widest. The luminosity was singularly free of tremulous motion, and between it and the spectator were ragged patches of black clouds, such as often portend rain, which began to fall in torrents four hours later."

For some years the need has been felt at the Harvard College Observatory, of some means of making a more prompt announcement of the results of its work. It is proposed therefore to issue a series of circulars, as required, to announce any matters of interest, such as discoveries made there, the results of recent observations, new plans of work, and gifts or bequests. It is not proposed to give these circulars a wide distribution, but rather to use them as a means of bringing new facts to the attention of the editors of astronomical and other periodicals, and thus secure the immediate publication of such portions as would be of interest to the readers of these periodicals. The distributions will be made without charge to such persons as will be likely to use the results.

In view of the unsatisfactory condition of veterinary anatomical nomenclature, we are glad to learn from the *Lancet* that the section of the recent sixth international veterinary congress detailed to give an opinion as to the necessary steps to be taken to remedy it, reported that the *Nomina Anatomica* of His be recognised as a basis for an international Latin nomenclature of veterinary anatomy, and that the work of adaptation, as well as the creation of new Latin denominations, should be allotted to certain anatomists of the countries represented, with the right of co-optation. This recommendation was unanimously adopted, and the following gentlemen were appointed to undertake this task, MM. Müller of Berlin, Arloing of Lyons, Lorge of Brussels, Sussdorf of Stuttgart, Schmalz of Berlin, Martin of Zürich, Rubeli of Bern, and Szakall of Pesth.

The Manchester Museum was opened to the public last Sunday afternoon. The attendance was considered satisfactory, some five hundred visitors entering. Attention was pretty evenly distributed through the various departments, but a special attraction was the collection of Egyptian antiquities, recently added to the museum, and consisting of palettes for grinding metal tools, ceremonial and other flints, mace-heads, pottery (figured, polished, and rough), stone vases, art jars, &c. Objects arranged naturally, as specimens of the Porifera, also found favour. Arrangements are being made for demonstrations to be given upon the various classes of exhibits; and it is expected that this concession, rendered possible by the important pecuniary assistance from the Manchester Corporation, will be fully appreciated.

The Executive Committee appointed to make the necessary local arrangements for the reception of the British Association in Liverpool, next year, held a meeting on Friday last, under the presidency of Sir Wm. Forwood. Among those present were the secretaries, Prof. Herdman, F.R.S., and Messrs. Isaac Thompson and Willink; the honorary treasurers, Mr. Reginald Bushell and Mr. C. Booth, jun.; Prof. O. Lodge, Drs. Hope and Forbes, and others. It was announced that the following gentlemen had been elected by the Council of the Association vice-presidents of the meeting, to be held from Wednesday, September 16, to September 23, 1896: The Lord Mayor (the Earl of Derby, K.G.), Lord Sefton, Sir W. B. Forwood, Mr. M. Rathbone, Mr. George Holt, Mr. T. H. Ismay, Principal Rendall, Sir Henry Roscoe, and Mr. W. Crookes. The President-elect is Sir Joseph Lister, Bart., F.R.S. A sub-committee was appointed to superintend the hospitable arrangements, which will be conducted on a liberal scale, and it was proposed to arrange for an excursion to the Isle of Man at the conclusion of the meeting. This excursion would occupy several days, and it was hoped that a local committee in the island would be appointed and facilitate arrangements. The honorary treasurers reported that they had received a large number of subscriptions; but as they had no reason to consider the list complete, they proposed to defer the publication of the list.

The vagueness of the English names of our wild plants is one of the stumbling-blocks in the way of the student of botany. Those given in our text-books are, for the greater part, mere book-names—often simply translations of the Latin names—which are not, and never have been, applied to the plant in any part of the country. Even with regard to familiar names in common use, many—as for instance, eyebright and harebell—are used for quite different plants in different parts of the country. On the continent, and especially in Germany, where the more educated peasantry have a much better knowledge of wild flowers than is the case with our agricultural labourers, the state of things is still worse. In his *Internationales Wörterbuch der Pflanzennamen*, Ulrich gives, in many cases, from twelve to twenty German names for the same species; and it is stated that for some species there are more than one hundred names in use. We learn from *Die Natur* that an attempt is being made to correct this evil. The *Allgemeine Deutsche Sprachverein* of Berlin offers two prizes, of the value of six hundred and four hundred marks, respectively, for the best schemes for a uniform German nomenclature of plants for schools. It would be an immense gain to the teaching of botany in schools if something of the same kind could be done in this country. Could not the *Journal of Botany* or the Botanical Exchange Club take it up?

After a part of last week's issue of Nature had been printed off, containing a note announcing the death of Dr. George Dawson, we were rejoiced to be able to stop the press and cancel it, as a cablegram contradicted the rumour.

The death is announced of M. A. M. Villon, the author of the "Dictionnaire de chimie industrielle" and other important works connected with chemical industry. He was only twenty-eight years of age.

An International Marine and Fisheries Exhibition will be held at Kiel next year, in connection with a provincial exhibition for Schleswig-Holstein, and will be open from May 13 to the end of September.

The earthquake which occurred at Rome on the first day of this month, and was noted in these columns (p. 12), was preceded by severe shocks, felt in parts of the United States, in the early morning of October 31. The shocks appear to have especially affected Ohio, Illinois, and Indiana.

Another important atmospheric disturbance approached our western coasts from the Atlantic on Friday last, 15th instant, causing further south-westerly gales and considerable damage; and before this disturbance had passed away a secondary depression reached St. George's Channel, on the following day. The rainfall which accompanied these storms was very considerable, amounting to nearly three inches in two days at Holyhead. In the storm of Saturday, the Bishop's lighthouse, off Pembroke, was struck by lightning.

The Committee formed for the purpose of erecting a memorial to the late Dr. Valentine Ball, C.B., F.R.S., Director of the Science and Art Museum, Dublin, announce their desire to close the subscription list at an early date, and trust intending subscribers will soon send their donations to the Treasurer, Dr. Samuel Gordon, Hume Street, Dublin. The subscription to the memorial is limited to one guinea. It is proposed to place a marble bust of Dr. Ball in the National Museum, the scene of his latest labours. It is further proposed, should there be sufficient funds, to have a portrait of Dr. Ball painted and placed in a position to be hereafter determined. About £120 has so far been subscribed.

THE first meeting of the one hundred and forty-second session of the Society of Arts was held on Wednesday evening, November 20. Previous to Christmas there will be four other ordinary meetings, as follows: November 27, locomotive carriages for common roads, by Mr. H. H. Cunynghame; December 4, on mural painting, with the aid of metallic oxides and soluble silicates, by Mrs. Anna Lea-Merritt and Prof. W. C. Roberts-Austen, C.B., F.R.S.; December 11, water purification by means of iron, by Mr. F. A. Anderson; December 18, machines for composing letter-press printing surfaces, by Mr. John Southward. The following papers will be read at meetings after Christmas: Dairy produce, by Mr. George Barham; the making of a great University for London, by Prof. Silvanus P. Thompson, F.R.S.; some native Irish industries, by Prof. Haddon; standards of light, by Mr. W. J. Dibden; ortho-chromatic photography, by Captain W. de W. Abney, C.B., F.R.S.; the garden in relation to the house, by Mr. F. Inigo Thomas; English book illustrations, 1860-70, by Mr. Joseph Pennell; Punjab irrigation, ancient and modern, by Sir James Broadwood Lyall, K.C.S.I.; the economic development of Kashmir, by Mr. Walter R. Lawrence. The following courses of Cantor lectures have been arranged: W. Worby Beaumont, on mechanical road carriages; Dr. J. A. Fleming, F.R.S., on alternate current transformers; Prof. J. M. Thomson, on the chemistry of metals and alloys employed for building and decorative purposes; Mr. H. Graham Harris, on refrigeration; Mr. Henry A. Miers, on precious stones; Mr. James Swinburne, on applied electro-chemistry. Two lectures, suitable for a juvenile audience, will be delivered on Wednesday evenings, January 1 and 8, 1896, by Prof. John Milne, F.R.S., on earthquakes, earth movements, and volcanoes.

A CONFERENCE, presided over by Sir Courtenay Boyle, and largely attended by representatives of municipal corporations, public companies, and others interested in the supply of electricity, was opened in the Westminster Town Hall yesterday, to consider the revised regulations made by the Board of Trade under the Electric Lighting Acts of 1882 and 1888. We summarise the report in the *Times*. The regulations were discussed seriatim, and a number of important changes were accepted. With reference to the Board of Trade definition of electrical pressure, Prof. Ayrton, who, with Mr. Compton, represented the Institution of Electrical Engineers, proposed that the expression "pressure" should mean "the difference of electrical potential between any part of any conductor and the earth, or between any two adjacent wires on the three or five-wire system." The Chairman promised that the proposal should receive careful consideration. He added, that he intended to advise the Board of Trade to raise the alternating current limit from 100 volts to a higher figure, say to 220 volts, or thereabouts. With regard to the low-pressure continuous current limit, he thought that it might be raised slightly above 300 volts. Discussion took place upon the regulation that "no high-pressure electric line shall be used for the transmission of more than 200,000 watts, and Mr. Compton suggested that the limit should be 500,000 watts." The Chairman said he intended to advise the Board of Trade not to adhere to the limit of 200,000 watts, but he thought that of 500,000 watts a little too high. He offered to make an important amendment in the clause referring to tests of insulation, the clause in its amended form reading: "Every electric main shall be tested for insulation after having been placed in position, the testing pressure being at least 200 volts, and the undertakers shall duly record the results of the tests of each line or section of a main." With reference to the clause requiring a test of insulation before a high-pressure circuit can be brought into use, the Chairman suggested the introduction of words providing that the test required in the case of electric lines should be twice the pressure to which the lines were to be subjected in use, and in the case of machines or apparatus intended to form part of a high-pressure circuit 50 per cent. more. As to the question of leakages from gas mains, and the accumulation of explosive mixtures in electrical conduits and street boxes, the Chairman said he would be prepared to recommend the Board of Trade to accept a clause based on that suggested by the Institution of Electrical Engineers, that is to say, imposing upon undertakers the obligation to take reasonable means to prevent the influx and accumulation of gas in boxes, and to give notice to the gas companies whenever an accumulation of gas therein was discovered. He accepted that clause on the understanding that there must be some further regulation with regard to the ventilation of street boxes.

A NOTE on the tinfoil grating as a detector for electric waves, by T. Mizuno, appears in the *Journal* of the College of Science of Tokyo. The author has been repeating and extending Aschkinass' most interesting experiments on this subject. The gratings employed are formed by coating a flat wooden block with tinfoil, and then cutting on it a number of fine parallel slits with a sharp knife. Two gratings have been used, one having a resistance of 130 ohms, and the other of 232 ohms. The wave-length of the electric radiation employed was about 60 cm. On exposure of these gratings to the electric radiation, the resistance fell in some cases as much as 11 ohms and 42 ohms respectively. Gentle tapping was sufficient to cause the resistance to increase to almost its former value. The experiments indicate that the angle which the plane of polarisation of the radiation makes with the strips of the grating influences the results to a certain extent, a greater decrease of resistance taking place when the strips are perpendicular to the plane in which the primary oscillations take place. The author has made some experiments with a view of determining whether the change in resistance is due to a molecular change in the tinfoil, or whether the change is a mechanical one. He has constructed gratings in which the spaces between the strips were much larger than in the above gratings. With this grating, however, no indication of a decrease of resistance under the action of electric radiation was observable. Gratings formed of fine german-silver wire and fine iron wire, also, showed no effect. The author concludes that the change is a mechanical one, and suggests that it may be due to small jagged points on the neighbouring strips coming into contact under the influence of the electric waves.

THE competition for mechanical carriages, which was arranged by the *Times-Herald* of Chicago to take place on November 1, has been postponed until the 28th inst., at the request of a number of the competitors who had entered for the competition, but were not prepared. According to the *Journal* of the Society of Arts, the *Times-Herald* thereupon offered a prize of £100, to be divided amongst those competitors who went over the course arranged for the race. This course extends over the line of boulevards which surround Chicago to a place named Waukegan on the lake shore, thirty miles to the north of the city. Several vehicles started, but only one completed the course—the carriage entered by A. Mueller, of Decatur, Illinois. The vehicle carries four persons, and is driven by a gasoline motor. The total distance covered was ninety-two miles, and the time taken 8 hours 44 minutes.

IF the Buchan Field Club succeeds in carrying out the ethnological survey sketched in its *Transactions* (1895) by Mr. T. Gray, who gives also the results of preliminary observations made by Mr. J. F. Tocher and himself, it will not only fill an important hiatus in the ethnographic chart of Great Britain, but also set an example which may be followed with advantage by similar societies all over the country. The observations referred to were made at the annual Buchan gathering, held this year at Mintlaw, and though no definite conclusions can be safely made from them, they show that a continuation of the survey will lead to interesting results, and help to settle a number of vexed questions in ethnology and history. The class of people at such gatherings as that at which the measures were made is very typical of the natives of the district, and the statistics obtained by Mr. Gray, and those working with him, should be of great value in determining the accurate anatomy of the typical native of Buchan.

A VALUABLE contribution to the existing literature of water-bacteriology has been recently made by M. N. van der Sleen. This monograph is a record of bacteriological investigations made during more than four years on the Amsterdam water-supply. The author has identified and described no less than 80 varieties of water microbes, some of which he regards as new, whilst others are identical with those already discovered by other investigators. A most helpful diagnostic aid is furnished by the 118 excellent photographic figures of microbes which accompany the text. No cholera bacilli were at any time found, and only one form which at all resembled them, although a careful search was made at a period when cholera had broken out in the vicinity of the intake of the water-supply, and when the river Vecht was declared contaminated by the authorities. M. van der Sleen has endeavoured to give water-bacteriologists fresh assistance in the difficult task of recognising the bacteria found in water, and the conscientious care with which he has accomplished this tedious piece of work eserves the highest praise.

THE well-known difficulty of obtaining instruments which will indicate rapid variations of temperature, has induced Mr. Paul Czermak, of Graz, to try thermo-elements with very fine wires for meteorological observations. These are better than thermometers with platinum bulbs, and much superior to glass-bulb thermometers, where rapid variations are to be measured. One of the instruments constructed consists of a thermo-couple of copper and constantane wire 0·1 m.m. thick. The ends are soldered to two hollow copper cylinders drawn into a point at the ends, and mounted side by side on a wooden support. The cylinders contain water, and hold ordinary thermometers indicating the average temperature. This instrument, when used in circuit with a strongly-damped aperiodic galvanometer, showed variations amounting to 2° C. within five minutes on a clear frosty Tirolese morning. The stratification of the air in layers of different temperatures was less in the afternoon. The paper describing these results, in *Wiedemann's Annalen*, also gives an account of a "relative actinometer" consisting of two concentric copper cylinders. The interior one is empty, and across one end of it are placed three thermo-couples in parallel, protected from draughts by a plate of rock-salt mounted obliquely to the axis of the cylinders. This instrument indicates the slightest variations of the intensity of solar radiation, such as those produced by different thicknesses of a filmy cloud.

SIR ROBERT BELL is said to have discovered a very large river flowing into James Bay. The river rises near the upper waters of the Ottawa, and drains a large area hitherto unexplored. The volume of water is so great as to make the river rank among the largest in Canada. It is navigable through the greater part of its course, but about one hundred miles from its mouth the descent becomes greater, and a series of rapids are formed. The name "Bell River" is proposed, in honour of its discoverer.

WE are indebted to the Vienna correspondent of the *Times* for the following information. At the beginning of this month the German Society for Geographical Discovery, and the special committee which has been organised for the purpose of promoting the exploration of the South Polar regions, held a joint sitting in Berlin, which Herr Julius von Payer, the well-known Austrian Arctic traveller, was requested to attend. In the course of the proceedings he was invited to modify the arrangements he had himself made in connection with the expedition to North-East Greenland, and, if possible, to co-operate with the Germans in undertaking an expedition to the South Pole. Herr von Payer replied that, although he was not adverse to the proposal, he could make no definite statement until he had ascertained the opinion of the Vienna committee, who had in hand the arrangements relative to the intended Austro-Hungarian expedition to Greenland. Within the next few days the Vienna committee will meet, under the presidency of Count Wilczek, with the object of considering the German proposals. The invitation to act in concert with Germany seems to be regarded with favour in Vienna. Herr von Payer has stated that, in view of the multitude of scientific and artistic opportunities afforded by a visit to Antarctic regions, he would have no objection to alter the destination of the contemplated Austro-Hungarian expedition. During the preliminary discussion, which took place in Berlin, it was decided that the expedition should consist of two steamers equipped on the most improved lines. The first landing would be effected on Kerguelen Island, whence it would be possible to proceed in two different directions—namely, either south or south-west, leading to a totally unknown region, or south-east towards the Magnetic Pole, in which direction a continent is supposed to exist. Geographical discovery, of course, would be the chief object of the expedition, but equally valuable results are expected to accrue to botany, zoology, and geology. About eighteen months would be required to prepare and organise the expedition, and the cost is estimated at about 1,000,000 marks. In order to achieve success the expedition would remain absent from two and a half to three years, it being considered essential that at least two winters should be spent in the Antarctic regions.

THE seventh number of the current volume of the *Verhandlungen der Gessellschaft für Erdkunde zu Berlin* contains a discussion, by Hermann Moedebeck, of the project of reaching the North Pole by balloon, with the conclusion that, in our present ignorance of Arctic wind currents, it is impossssible to decide as to the probabilities of success. Dr. Hedin continues an account of his journey across the Takla-Makan desert east of Yarkand. Wegener gives a summary of the papers read at the Geographical Congress in London. The volume refers to the departure of an expedition, under Humpelmayr and Sperhinger, from the Somal coast, in order to march southwards across the Galla country to Mombasa. The more important contributions offered to this Society are published in its *Zeitschrift*, of which we have received the fourth part of vol. xxx. This contains the third part of the report by the cousins Sarasin upon their travels in Celebes, describing the journey, in the winter of 1894, across the centre of the island from Boni to the Gulf of Tomini. The report is mainly narrative, but contains many notes on the zoology, anthropology, and geology of the district traversed. The monographs previously issued by the Sarasins, containing zoological and anthropological discoveries made during their visit to Ceylon, are well known, and encourage us to expect important results from their present journey.

THE principal article in the last number of the *Mittheilungen* of the Geographical Society of Vienna (Bd. xxxviii. Nos. 7 and 8) is a memoir, by R. Payer, on the districts of Eastern

Peru included in the Amazon basin. It consists mainly of an account of the various diseases. Dr. Gavazzi gives a short account of the hydrology of the lower part of the River Krka in Dalmatia. Among the smaller articles contributed is a biography of Huxley by Dr. Haas, an account of the German expedition of Lieut. von Carnap-Querheimb and Dr. Grüner in Togoland, and of Dr. Krüger up the Palena river in Chile. There is also a short notice of Glave, who did excellent work under Stanley on the Congo, and died there in May last. It also contains a report on the various expeditions engaged in work in Africa. From this we learn that Capt. Bottego is attempting to march from Barawa, on the Somali coast, to Logh, on the Juba; thence he is to cross to Lake Rudolf, and explore the course of the Omo, from its mouth to the point where Prince Ruspoli was killed. The King of Italy and the Italian Government have each contributed 40,000 lire for this expedition, Prince Boris, the well-known Russian sportsman, has been shooting in the Ogaden country in Somaliland, and has traced the Dachato river to its confluence with the Webi Schebeyli. Dr. Humpelmayr left Berbera in June in order to march across East Africa from north to south, as far as Mombasa.

THE Zoological Society have just issued the thirty-first volume of the *Zoological Record*, containing a summary of the zoological literature published in the year 1894. The various articles have been prepared by Messrs. J. A. Thomson, R. Lydekker, R. Bowdler Sharpe, G. A. Boulanger, W. A. Herdman, B. B. Woodward, D. Sharp, F. A. Bather, R. Hanitsch, and Miss Florence Buchanan. The whole volume has been edited by Dr. D. Sharp, F.R.S., of the Cambridge University Museum. Great credit is due to the Society and to the Editor for the early date at which this volume has been published. We observe that the corresponding *Record*, just finished in Wiegmann's *Archiv*, only relates to the year 1890, being thus *four years* behind that of its English rival. A very useful feature in the present volume is the newly revised list of abbreviations used in the *Record* for the titles of the *Journals* and *Transactions* that contain zoological papers. These periodicals are now, as is well known, exceedingly numerous, and increase in number every year. Some sixty or seventy new titles have been added to the present edition. The principal libraries in London and Cambridge, in which the various periodicals are to be found, are indicated by key-letters attached to each title, so that the recorder in each subject may always know where to go for his information. We observe that the present volume contains no records for the Crustacea, Arachnida, Myriopoda, and Cœlenterata, the naturalists to whom these subjects were assigned (Mr. R. I. Pocock and Dr. S. J. Hickson) not having delivered their manuscripts at the promised date. These deficiencies are much to be regretted; but the early appearance of a *Zoological Record* is a matter of so much importance, that we cannot but approve of the Editor refusing to wait for the convenience of his tardy coadjutors.

A FLORA of the Gramineæ of France, Belgium, and Switzerland is in preparation by M. T. Husnot, of Cahan, near Athis (Orne).

THE Christmas course of lectures, adapted to a juvenile auditory, at the Royal Institution, will be delivered this year by Prof. John Gray McKendrick, F.R.S. The subject will be "Sound, Hearing, and Speech," and the lectures will be experimentally illustrated.

A SKETCH of the life and personality of M. Berthelot, now Minister of Foreign Affairs, appears in the current number of the *Chemist and Druggist*. "The Republic has no use for chemists," is said to have been the remark made by the tribunal which condemned Lavoisier to the guillotine. The words are probably apocryphal, but, at any rate during this century, France has in many ways shown her appreciation of the abilities and work not only of chemists, but of all her scientific investigators.

IN our report of the opening of the Chingford Museum (p. 16), the writer inadvertently wrote "Dengey Hundred" in reference to Mr. Walter Crouch's collection of shells. He desires us to state that the collection was made in the Becontree Hundred, which comprises the Forest District.

THE Central Hydrographic Office of Vienna has published its first *Jahrbuch* containing daily or monthy rainfall values at 861 stations, and tidal observations at 493 stations, for the year 1893. The work occupies 562 large folio pages, and contains brief discussions of the observations, arranged according to the various river systems, and a map showing the yearly distribution of rainfall over the entire area. The publication is a valuable contribution to meteorological and hydrographical science.

THE additions to the Zoological Society's Gardens during the past week include a Blotched Genet (*Genetta tigrina*), two Crossed Snakes (*Psammophis crucifer*), a Smooth-bellied Snake (*Homalosoma lutrix*), a Rough-keeled Snake (*Dasypeltis scabra*), a Many-spotted Snake (*Coronella multimaculata*), a Hygian Snake (*Elaps hygiæ*) from South Africa, presented by Mr. J. E. Matcham; eight Great Tits (*Parus major*), British, presented by Mr. Brunsden; a Puffin (*Fratercula arctica*), British, presented by Dr. J. B. Johnson; two Lions (*Felis leo*, ♂ ♀) from Africa, deposited; a Black-faced Spider Monkey (*Ateles ater*) from Eastern Peru, purchased.

OUR ASTRONOMICAL COLUMN.

A NEW COMET.—A telegram, received from Kiel on November 18, announces the discovery of a new comet by Mr. Perrine at the Lick Observatory on the 16th inst. At the time of observation the comet was in R.A. 13h. 44m. and Decl. 1° 40′ N.; accordingly, it was nearly midway between ζ and τ Virginis, and would rise at London about 3.40 a.m. It is described as having a bright tail.

THE NEW MEROPE NEBULA.—The round bright nebula very close to Merope, in the Pleiades, which was discovered by Prof. Barnard in 1890, has recently been observed by him with special reference to its position (*Ast. Nach.* 3315, p. 42). With respect to Merope, its position angle for 1895·67 was 166°·6, and distance 33″·58; these figures agree remarkably well with the earlier measurements, and they indicate that the place of the nebula can be determined with such precision, that repeated observations may be expected to show whether it has any proper motion, or physical connection with the star. It is remarked that the nebula is only difficult in small telescopes because of its extreme closeness to the star, and that away from the star it would be an easy object in almost any telescope. The use of an occulting bar in the eyepiece of the telescope would probably facilitate observations of the nebula.

NUMBER OF NEBULÆ.—The number of known nebulæ has during the past few years been so largely increased by the labours of different observers, and the modes of publication have been so varied, that Dr. Dreyer's new index catalogue of the recent discoveries will be highly appreciated (*Mem. Roy. Ast. Soc.* vol. li. p. 185). This is a continuation of the well-known "New General Catalogue," which contained particulars of the 7840 nebulæ and clusters known up to the end of 1887, and brings the information to the beginning of the present year. The seven years' observations have resulted in the detection of 1529 new nebulæ, so that the general catalogue and the index together give the positions and descriptions of 9369 objects. More than half of the new discoveries are to be placed to the credit of M. Javelle, who has the advantage of employing the great refractor of the Nice Observatory. It is notable that only a very small proportion of new nebulæ has been discovered by the photographic method. Most of the objects included in the index are very small and faint, and it is remarked that they are probably only a small fraction of the total number visible in large telescopes. Dr. Dreyer considers it desirable that some of the possessors of large telescopes should turn their attention from the search for very faint nebulæ to "the less showy but more useful work of verifying the many old nebulæ which require re-observation."